

Work Order ID 109518

\*109518\*

Page 1

November-21-13 2:33:46 PM

Item ID: D6102-013 Accept \*N900040100\* Setup Start \*NS1\*  
 Revision ID: Stop \*NS2\*  
 Item Name: Saddle Billet  
 Start Date: 12/09/13 Start Qty: 10.00 \*10\* Cust Item ID:  
 Required Date: 12/09/13 Req'd Qty: 10.00 \*10\* Customer:  
 Reference:

Approvals: Process Plan: MLJ Date: 12-11-22 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_  
 Run Start \*NR1\*  
 Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6102	Rev D								
100	PURCHASING	0.00							
*100*									
Purchasing	Memo	0.00							
Purchasing	Issue P/O: <u>22195</u> a) Description: Aluminum Billetb) 7.000" x 6.500" x 2.000" thickc) Tolerance on all dimensions is +0.06/0.00d) Grain direction along 6.500" lengthe) Material: 6061-T6/T6511 (QQ-A-250/11 or QQ-A-200/8)Material release certifi								
110	Receive & Inspect for Damage & Mat'l Certs	0.00							
*110*									
Packaging	Memo	0.00							
Packaging	Ensure material certification is attached								
120	QC6- Inspect dimensions to drawing	0.00							
*120*									
QC	Memo	0.00							
Quality Control	Check certification to Dwg D6102 for compliance								

CL 13/11/26 (10)

9/3/2/4 (10)

10 13-12-08

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

Work Order: _____  Part No. _____  NCR No. _____	<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/>	<b>AGAINST DEPARTMENT/PROCESS</b>  <table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>															
Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>															
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Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

### FAULT CATEGORY

<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric <input type="checkbox"/> Cracks <input type="checkbox"/> Crimp/Kink/Ripple/Wave <input type="checkbox"/> Cuffs <input type="checkbox"/> Crushing <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Marks/Chatter <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damage/Defect <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drawing <input type="checkbox"/> Drill Holes <input type="checkbox"/> Finish <input type="checkbox"/> Fit/Function	<input type="checkbox"/> Folio/Program <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete/Unqualified <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Misaligned/off center <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Off-set <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence	<input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge  <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Set-up <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other
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Work Order ID 109518

\*109518\*

Page 2

November-21-13 2:33:46 PM

Item ID: D6102-013

Accept

\*N900040100\*

Setup Start

\*NS1\*

Revision ID:

Stop

\*NS2\*

Item Name: Saddle Billet

Start Date: 12/09/13

Start Qty: 10.00

\*10\*

Cust Item ID:

Required Date: 12/09/13

Req'd Qty: 10.00

\*10\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

\*NR1\*

Stop

\*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

130

Identify as per dwg & Stock Location: MAT46

0.00

\*130\*

Packaging

Memo

0.00

Packaging

10

13-12-08

140

QC21- Final Inspection - Work Order Release

0.00

\*140\*

QC

Memo

0.00

Quality Control

*[Signature]* / RM 13/12/10

13-12-9

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

Work Order: _____  Part No. _____  NCR No. _____	<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/>	<b>AGAINST DEPARTMENT/PROCESS</b>  <table style="width:100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
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# Picklist Print

November-21-13 2:33:45 PM

Page 1 / 1

Work Order ID: 109518

Parent Item: D6102-013

Parent Item Name: Saddle Billet

Start Date: 12/09/13

Required Date: 12/09/13

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP Rev:A New Issue 06-07-03 JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6102-013P 6061-T6 7.0X6.5X2.0		Purchased	No			110	Each	0.0000	1	10		12/11/13 (10)	

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

Work Order: _____  Part No. _____  NCR No. _____	<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/>	<b>AGAINST DEPARTMENT/PROCESS</b>  <table style="width:100%; border: none;"> <tr> <td style="width:15%;">Skid-tube <input type="checkbox"/></td> <td style="width:15%;">Crosstube <input type="checkbox"/></td> <td style="width:15%;">Water Jet <input type="checkbox"/></td> <td style="width:15%;">Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
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Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

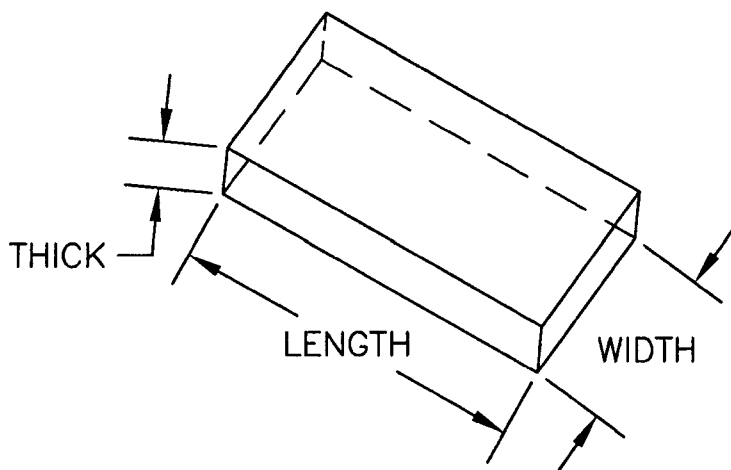
### FAULT CATEGORY

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DESIGN #	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED CP	APPROVED #	DRAWING NO. D6102	Rev. D SHEET 1 OF 1
DATE 06.06.30		TITLE SADDLE BILLET, 6061	SCALE NTS
A	01.03.30	NEW ISSUE	
B	03.10.20	ADD D6102-005/-007/-009	
C	04.08.25	ADD D6102-010/-011	
D	06.06.30	ADD D6102-013	

## SPECIFICATION CONTROL DRAWING



109518 MJS  
13-11-22

RELEASED

06.08.15 #

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, LENGTH x WIDTH x THICK (+0.06/-0.00), AND GRAIN DIRECTION AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.06/-0.00.

ALL DIMENSIONS ARE IN INCHES.

Part No.	Alloy	Length	Width	Thick	Grain Direction
D6102-001	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	7.880	6.250	2.000	Along 7.880 Length
D6102-003	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	6.000	6.250	2.000	Along 6.000 Length
D6102-005	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	47.85	15.250	1.000	Along 47.85 Length
D6102-007	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	7.500	7.000	2.500	Along 7.500 Length
D6102-009	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	11.000	6.000	5.000	Along 11.000 Length
D6102-010	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	7.950	8.250	2.500	Along 7.950 Length
D6102-011	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	6.500	8.250	2.500	Along 6.500 Length
D6102-013	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	6.500	7.000	2.000	Along 6.500 Length

SL13-12-08

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## B I L L O F L A D I N G

No: PEC 852628

Ship From:

TENSSENKRUPP MATERIALS NA

2821 LANGSTAFF ROAD

CONCORD, ONTARIO L4K 5C6

Tel: 905 669 9444 Fax: 905-738-9033

Ship Date

28Nov13 at 16:00 From PFW

Probill

Via VIM TRANSFER

FOB CONCORD

Frt PREPAID

Route 0- 0 Manifest

Vhcle Trailer

Slp STAN IVERS (905-532-1350)

Sold To: ( 18170)

DART AEROSPACE (US)

1270 ABERDEEN STREET

HAWKESBURY, ONTARIO K6A 1K7

Ship To: ( 0)

DART AEROSPACE (US)

1270 ABERDEEN STREET

HAWKESBURY, ONTARIO K6A 1K7

Tel: 613-632-5200 Fax: 16136321053

## B I L L O F L A D I N G

1) Our Order PEC-629401- 1 Your PO # 22195

Part # D6101-001P

Rel #

ALUMINUM PLATE 7075-T7351 USI

2.00" THICK X 6.2500" X 6.0000"

GRAIN DIRECTION TOWARD 6.00 DIM

Heat Number

Tag No

Quantity

PCS

Wt LBS

759171A2

240302

5.21 SFT

20

158

2) Our Order PEC-629401- 2 Your PO # 22195

Part # D6101-003P

Rel #

ALUMINUM PLATE 7075-T7351 USI

2.00" THICK X 6.2500" X 7.8750"

GRAIN DIRECTION TOWARD THE 7.875 INCHE DIM

Heat Number

Tag No

Quantity

PCS

Wt LBS

759171A2

240303

6.84 SFT

20

207

3) Our Order PEC-629401- 3 Your PO # 22195

Part # D6102-013P

Rel #

ALUMINUM PLATE 7075-T7351 USI

2.00" THICK X 7.0000" X 6.5000"

GRAIN DIRECTION TOWARD THE 6.500 INCH DIM

Heat Number

Tag No

Quantity

PCS

Wt LBS

759171A2

240304

3.16 SFT

10

95

	Tags	PCS	LBS
TOTAL:	3	50	460

Heat Number

759171A2

\*\*\* Chemical Analysis \*\*\*

Page: 1 ....Continued

TOUTES ERREURS ET/OU MARCHANDISES MANQUANTES DOIVENT ÊTRE  
RAPPORTÉES IMMÉDIATEMENT

ERRORS OR SHORTAGE MUST BE REPORTED IMMEDIATELY

RETOUR DE MARCHANDISES AVEC NOTRE NUMÉRO D'APPROBATION SEULEMENT

MERCHANDISE MAY NOT BE RETURNED WITHOUT OUR APPROVAL NUMBER

REÇU EN BONNE CONDITIONS / RECEIVED IN GOOD CONDITION

DATE

TVO/OST# 1017327081 TQ001 TBS/OST TVU/OST # 110000001 570001

B 11/1/29

1 SKID  
Rec FL



# THYSSENKRUPP MATERIALS NA

## Certificate of Mill Test Results

PO/Rel

We certify that this is a true copy of the report furnished by the producer of the metal, or data resulting from tests made in approved labs.

Signed by: 

BL PEC-000000-000

Pg 1/2

Attn: DART AEROSPACE

PART NO.

<b>SHIP TO:</b> THYSSENKRUPP MATERIALS NA TRENCH-CONTRACT WHSE @CONCORD 2821 LANGSTAFF ROAD CONCORD, ON, CA L4K 5C6
<b>SOLD TO:</b> THYSSENKRUPP MATERIALS NA 2821 LANGSTAFF ROAD CONCORD, ON, CA L4K 5C6

**KAISER**  
**ALUMINUM**  
 Trentwood Works - Spokane, WA 99215  
 Phone: (800) 367-2586

### CERTIFIED TEST REPORT

Serial Number  
 4313701

CUSTOMER PO NUMBER: PEC-252084		WORK PACKAGE:	CUSTOMER PART NUMBER:		SHIP RUNLOAD: 102767/33	GOVT CONTRACT NUMBER:
KAISER ORDER NO: 1160025	LINE ITEM: 1	SHIP DATE: 25-OCT-2013	ALLOY: 7075	CLAD: BARE	TEMPER: T7351	PRODUCT DESCRIPTION: Kaiser Select® Plate
WEIGHT SHIPPED: 5758 LB	QUANTITY: 4 PCS EST.	TRUCK B/L #: 2044667	GUAGE: 2.0000 IN (50.8000 MM)	DIAMETER/WIDTH: 48.500 IN (1231.8 MM)	LENGTH: 144.500 IN (3670.3 MM)	

MHU 1728278: LOT 759171A2: 2 pieces;  
 MHU 1728280: LOT 759171A2: 1 pieces;  
 MHU 1728283: LOT 656175A7: 1 pieces;

### Certified Specifications

AMS 4078/RevJ  
 ASTM B 208/Rev10  
 BSS 7055/RevB  
 DPS 4.713/RevAK  
 MMS 159/RevT

AMS-QQ-A-250/12  
 ASTM B 594/Rev09  
 CMMP 025/RevU  
 GAMPS 9101/RevB  
 PS 21211/RevM

AMS-STD-2154/RevA  
 BAC 5439/RevJ  
 CSTI 006/RevE  
 GSS16100/RevG/Amd1

Test Code: 4297

### Test Results

Lot: 656175A7 Cast 572 Drop 07 Ingot 2 Melted in USA

(ASTM E8/B557)  
 (EN 2002-1)

Tensile:	Temper	Dir / # Tests	Ultimate KSI (MPA)	Yield KSI (MPA)	Elongation %
	T7351	LT / 2 (Min:Max)	71.2 : 71.5 (491 : 493)	60.6 : 61.0 (418 : 421)	11.5 : 12.4

(ASTM E1004)  
 (EN 2004-1)

Conductivity %IACS :	40.8 Min	41.1 Max
(MS/M) :	23.7 Min	23.8 Max

(ASTM E1251)

Chemistry:	SI	FE	CU	MN	MG	CR	ZN	TI	V	ZR	OTHER
Actual(wt%)	0.08	0.21	1.5	0.03	2.4	0.20	5.6	0.03	0.01	0.02	TOT 0.05

# THYSSENKRUPP MATERIALS NA

## Certificate of Mill Test Results

PO/Rel

We certify that this is a true copy of the report furnished by the producer of the metal, or data resulting from tests made in approved labs.

Signed by: *[Signature]*

BL PEC-000000-000

Pg 2/2

PART NO.

Attn: DART AEROSPACE

### KAISER ALUMINUM

Trentwood Works - Spokane, WA 99215  
Phone: (800) 367-2586

### CERTIFIED TEST REPORT

Serial Number  
4313701

Lot: 75B171A2 Cast 573 Drop 08 Ingot 2 Parent Lot: 857095A8 Melted in USA

(ASTM B8/B557)  
(EN 2002-1)

Tensile:	Temper	Dir / # Tests	Ultimate KSI (MPA)	Yield KSI (MPA)	Elongation %
	T7351	LT / 2 (Min:Max)	70.1 : 71.0 (483 : 490)	58.7 : 60.2 (405 : 415)	12.2 : 12.2

(ASTM E1004)  
(EN 2004-1)

Conductivity %IACS :	41.0 Min	41.4 Max
(MS/M) :	23.8 Min	24.0 Max

(ASTM E1251)

Chemistry:	SI	FE	CU	MN	MG	CR	ZN	TI	V	ZR	OTHER
Actual(wt%)	0.09	0.19	1.4	0.03	2.6	0.20	5.8	0.02	0.01	0.01	TOT 0.05

#### ALLOY LIMITS

	SI	FE	CU	MN	MG	CR	ZN	TI	V	ZR	OTHER	MAX
7075												
MIN(wt%)	0.00	0.00	1.2	0.00	2.1	0.18	5.1	0.00	0.00	0.00	EACH	0.05
MAX(wt%)	0.40	0.50	2.0	0.30	2.9	0.28	6.1	0.20	0.05	0.05	TOT	0.15

Aluminum Remelnder

#### TEST NOTES

Metal represented by this test report was 100% immersion ultrasonically tested from one side with 3mm dead zones top and bottom and meets the Class A and Class B requirements of all specifications referenced on this test report. No surface marking of sonic indications is performed.

#### CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC (Kaiser) hereby certifies that metal shipped under this order was melted in the United States of America or a qualifying country per DFARS 225.872-11(b), was manufactured in the United States of America, and meets the requirements of DFARS 252.225 for domestic content. This material has been inspected, tested and found in conformance with the requirements of the applicable specifications as indicated herein. For material thicknesses outside specification limits, mechanical properties are as shown herein and chemical composition meets specification requirements. All metal which is solution heat treated complies with AMS 2772. Any warranty is limited to that shown on Kaiser's standard general terms and conditions of sale. Test reports are on file, subject to examination. Test reports shall not be reproduced except in full, without the written approval of Kaiser Aluminum Fabricated Products, LLC laboratory. The recording of false, fictitious or fraudulent statements or entries on this certificate may be punished as a felony under Federal law. ISO-9001:2000 certified.

*[Signature]*

JAMES HEMENWAY, LABORATORIES SUPERVISOR

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